

Attorneys Docket No.: 06618-565001 Attorney's Docket No.:06618-565001/CIT-3128
Serial No.: 09/732,506
Amendment dated August 11, 2004
Reply to Office Action mailed March
11, 2004

Remarks

Reconsideration and allowance of the above-referenced application are respectfully requested

Claim 46 stands objected to due to informalities, which are corrected herein.

Claims 1-52 stand rejected under 35 USC 102(b) as allegedly being unpatentable over Raviv. In response, the claims are amended herewith to obviate this rejection.

Raviv does teach a system of determining three-dimensional information from shadows. According to Raviv, a light source is moved to generate a series of shadows. The third dimension of the object can be determined from each shadow. This is used to form a group of planar slices. The series of slices can be used to reconstruct the surface of the object. See generally column 6 lines 13-23. Basically, this system chooses slices of the shadow, and from each slice determines the three-dimensional information, and thereby simulates the shape from that three-dimensional information.

The claims have been amended to recite additional subject matter that is in no way taught or suggested by Raviv. Specifically, as described above, Raviv teaches choosing slices of the information, and at each slice, determines the three-

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dimensional information. The inventors recognized, however, that when a moving shadow is used, the movement itself may provide information. Accordingly, claim 1 has been amended to recite that the moving shadow is imaged to determine temporal information about the moving shadow and also to determine shadow information at times associated with the temporal information. In this way, the three-dimensional information is determined not only from the geometric or "spatial" information, but also from information that is derived from the movement of the shadow, or temporal information.

Raviv teaches absolutely nothing about using temporal information. Therefore, claim 1 should be allowable along with the claims which depend therefrom.

New claims 53-56 are also added to depend from claim 1, and define additional subject matter which is completely patentable over the cited prior art. Claim 53 defines determining a profile of the shadow image as it moves that includes at least intensity information about different parts of the moving shadow image and defines determining an edge of the shadow by using the profile to determine the edge of the shadow. Raviv teaches an entirely different technique of determining the edge of the shadow. Specifically, column 7, lines 40-53 define using a thresholding test where each point that achieves a minimum level

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is defined as "illuminated" and each other point is defined as "shadow." This fixed threshold may be usable under controlled lighting. However, under varying lighting conditions, the presently claimed profile technique may provide improved results. Nowhere does Raviv teach anything about this kind of profiling defined by claim 53, and therefore claim 53 should be additionally allowable.

Claim 54 defines that the profile includes both spatial and temporal information and that the edge determination uses both the spatial and temporal information. This is even further patentable over the cited prior art.

Claim 55 defines the zero crossing techniques, which are no way taught or suggested by the cited prior art.

Finally, claim 56 defines that the determination is carried out in dual space. Nowhere does Raviv teach anything about the use of dual space, and thus claim 56 should be further allowable.

Claim 12 has been amended to recite the profile determination, and as discussed above, this can produce improved operation under varied lighting conditions. Raviv teaches nothing about this, and therefore claim 12 should be allowable wall with the claims which depend therefrom.

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Claim 57 defines that the profile includes both spatial and temporal information, and therefore should be even further allowable over the cited prior art.

Claim 59 defines dual space.

Claim 26 has been amended to recite extracting temporal information from the moving shadow and using this temporal information as part of the operation. This is in no way taught or suggested by the cited prior art, and hence should be allowable.

Claim 36 has been amended to recite extraction of the temporal information, which should be allowable for reasons discussed above.

Claim 61 depend from claim 36 and defines the profile which should be allowable over the cited prior art which does not teach or suggest this profiling operation.

Finally, claim 47 has been amended to recite the subject matter of determining information into orthogonal shadow claims. The use of two orthogonal shadow planes may have significant advantages, since it enables self-determination of calibration information. Raviv does teach the use of multiple different techniques, but teaches nothing about it to orthogonal shadow claims. Therefore, amended claim 47 (and other comparable claims) should be allowable for these additional reasons, along

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reasons, along with the claims that depend therefrom.

Specifically, claims 63 and 64 respectively define the profile, and the temporal information, and should be additionally allowable for these reasons.

In view of the above amendments and remarks, therefore, all of the claims should be in condition for allowance. A formal notice that effect is respectfully solicited

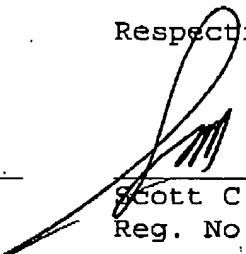
It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

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Applicant asks that all claims be allowed. Please apply
any charges or credits to Deposit Account No. 06-1050

Respectfully submitted,

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